

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

1. (currently amended) An optical filter comprising [[:]]:  
~~a dielectric stack of alternating relatively high and low refractive index layers;~~  
 an opaque, reflective ~~metallie~~ metal layer; and  
~~a dielectric spacer layer located between the dielectric stack and the metallie~~  
~~layer, deposited on said metal layer;~~  
a dielectric stack of alternating relatively high and low refractive index layers  
deposited on said spacer layer; and  
the thickness of said dielectric spacer layer and said high and low refractive index  
layers being selected such that the filter having has a resonant wavelength, at which  
wavelength incident radiation is channelled channeled into, and absorbed by, the metallie  
metal layer.

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 2. (previously amended) An optical filter, as claimed in claim 1, wherein the dielectric spacer layer has the same composition and thickness as one of the constituent layers in the dielectric stack.

Claims 3-6. (canceled)

7. (currently amended) An optical filter as recited in claim 1 wherein the spacer layer is formed from a low refractive index material and is equal to even integer multiples of a quarter-wave optical thickness, including a zero (absentee layer), and symbolically described as;  
 Substrate / M nL (HL)<sup>x</sup> H / ambient  
 where:

M is the metal layer ~~mirror thin film~~;

n = 0,2,4,6, etc...; even integer multiples of the quarter wave optical thickness of the spacer layer; and

H and L represent quarter wave optical thicknesses respectively of the high and low refractive index layers.

8. (currently amended) An optical filter as recited in claim 1 wherein the spacer layer is formed from a low refractive index material and is equal to odd integer multiples of quarter-wave (optical thickness), symbolically described as;

Substrate / M nH (LH)<sup>x</sup> / ambient

where:

M is the metal layer ~~mirror thin film~~;

n = 0,1,3,5,7,..., odd integer multiples of the quarter wave optical thickness of the spacer layer; and H and L represent quarter wave optical thicknesses respectively of the high and low refractive index layers.

9. (cancelled)

10. (currently amended) An optical filter as recited in claim 1 further comprising a tiered multi-layer stacking sequence of:

Substrate / M H (LH)<sup>4</sup> / ambient where H and L equal one quarter-wave optical thicknesses, of relatively high and low refractive index materials, respectively, zinc sulphide and thorium ~~fluoride~~ fluoride.

11. (previously amended) An optical filter as recited in claim 1 further comprising a tiered multi-layer stacking sequence of:

Substrate / M HHH (LH)<sup>4</sup> / ambient where H and L equal one quarter-wave optical thicknesses, of relatively high and low refractive index materials, respectively, zinc sulphide and thorium fluoride.

12. (currently amended) An optical filter ~~as recited in claim 1 further~~ comprising: a tiered multi-layer stacking sequence of[[:]] Substrate / M (HL)<sup>2</sup>xH(LH)<sup>2</sup> / ambient where H and L equal one quarter-wave optical thickness of relatively high and low refractive index materials, respectively, zinc sulphide and thorium fluoride[[:]] M is an opaque reflective metal layer, 'x' is

between about 4 through 1000, and the filter has a plurality of resonant wavelengths spaced apart on a wavelength scale, at which wavelengths incident radiation is channeled into, and absorbed by, the metallic layer.

13. (previously amended) An optical filter, as claimed in claim 1 incorporating additional dielectric spacers, configured to steepen the absorption characteristic edge and so square off filter performance.

14. (previously amended) An induced absorption optical filter as recited in claim 1 configured to operate in the wavelength band 8 to 12 $\mu$ m.

Claims 15-16. (cancelled)

17. (currently amended) A laser ~~incorporating the optical filter of claim 1 at one end of a resonator comprising:~~

a laser resonator terminated by first and second mirrors, at least one of said mirrors including an opaque, reflective metal layer, a dielectric spacer layer deposited on said metal layer, a dielectric stack of alternating relatively high and low refractive index layers deposited on said spacer layer, the thickness of said dielectric spacer layer and said high and low refractive index layers being selected such that the filter has a resonant wavelength, at which wavelength incident radiation is channeled into, and absorbed by, the metal layer.

18. (currently amended) A laser ~~incorporating a pair of optical filters as recited in claim 1 located at each end of a resonator comprising:~~

a laser resonator terminated by first and second mirrors, at least one of said mirrors including a tiered multi-layer stacking sequence of Substrate / M (HL)<sup>2</sup>xH(LH)<sup>2</sup>/ ambient, where H and L equal one quarter-wave optical thickness, of relatively high and low refractive index materials, respectively, zinc sulphide and thorium fluoride, M is an opaque reflective metal layer, 'x' is between about 4 through 1000, and the filter has a

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plurality of resonant wavelengths spaced apart on a wavelength scale, at which  
wavelengths incident radiation is channeled into, and absorbed by, the metal layer.

Claims. 19-24. (cancelled)

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